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Memorandum for:

This memorandum was prepared for
 Mr. Frank Vargo, Deputy Assistant Secretary
 of Commerce by the
 Office of European Analysis, for assistance
 on estimating the impact of US exports to
 Spain and Portugal of the EC enlargement on
 1 January 1986.

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Central Intelligence Agency



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**Estimating the Impact of EC Enlargement on US Exports
to Spain and Portugal**

We estimate that EC enlargement has already had a negative impact on US exports to Spain, reducing trade in nonfuel, nonfood goods by \$92 million in the first half of 1986, from expected levels. Our general approach was first to estimate Spanish imports of nonfuel, nonfood goods, in the first half of 1986, and to also estimate the US share of the Spanish market; the difference between the estimated figure and actual trade is attributed to EC expansion.

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In the case of Spain, we estimated that the imports of nonfuel, nonfood goods from all sources should have risen about 26.7 percent in dollar terms for the first half of 1986, over the year-earlier period. Preliminary data shows that the actual rise for this period was about 37 percent. Also according to our estimates, Spanish imports from the United States should have risen about 17.3 percent over this period, a gain of \$162 million. Preliminary data shows that the actual rise in US exports to Spain was only 7.5 percent, or about \$70 million. We hypothesize that a structural change has taken place that renders the US-Spanish trade estimator incorrect, and that the EC expansion is the cause of this structural shift and is the reason for the missing \$92 million in Spanish imports from the United States.

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We used Commerce-supplied tariff data to see if changing tariff rates could account for the discrepancy. Assuming an average tariff reduction of 6.8 percentage points for exports from the EC countries, and a 2.6 percentage point reduction in tariffs from non-EC countries (including the United States), starting 1 January 1986, we estimated that total Spanish imports of nonfuel, nonfood goods, should have increased 28.8 percentage points over the period, and US exports to Spain should have

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increased 17.5 percent, or slightly more than the 17.3 percent predicted rate assuming there had been no change in tariff rates. This result suggests that the loss in US exports was due not to quantifiable changes in relative prices due to tariff changes, but to other, perhaps institutional, factors related to the EC enlargement.

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Using a similar approach for Portugal we estimated that, without the EC enlargement, Portuguese imports of nonfuel, nonfood goods from all sources would have risen by 28.5 percent, and imports from the US by 18.3 percent, for the first half of 1986, over the year-earlier figure. Actual imports from all sources over this period rose about 29 percent, but imports from the United States fell over 20 percent. Given that US exports of nonfuel, nonfood, goods were falling at a rapid rate prior to the EC enlargement, we hesitate to infer that the sole cause of the 1986 decline was due to EC membership.

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Model of Spanish Imports

SYMBOL DECLARATIONS

ENDOGENOUS:

OGSPFUS - US SHARE OF SPANISH MARKET FOR NONFUEL, NONFOOD IMPORTS
 SPMOG - SPANISH IMPORTS OF NONFUEL, NONFOOD GOODS, REAL PESETA TERMS
 SPMOGPD - PESETA PRICE DEFLATOR FOR SPANISH IMPORTS
 SPNMOG - SPANISH IMPORTS IN CURRENT PESETA TERMS
 SPNMOGD - SPANISH IMPORTS IN CURRENT DOLLAR TERMS
 USNXSP - US EXPORTS TO SPAIN IN CURRENT DOLLAR TERMS
 USXSP - US EXPORTS TO SPAIN IN 1985 DOLLAR TERMS

EXOGENOUS:

SPMOGPID - DOLLAR PRICE DEFLATOR FOR SPANISH IMPORTS
 SPXR - DOLLAR/PESETA EXCHANGE RATE
 SPY - REAL SPANISH GDP
 SPYPD - SPANISH GDP DEFLATOR
 USXOGPID - PRICE DEFLATOR FOR US EXPORTS, DOLLAR TERMS

EQUATIONS

SPANISH IMPORTS IN REAL PESETAS:

$$1: \quad \begin{aligned} \text{LOG(SPMOG)} &= -3.13668 + 0.79737 * \text{LOG(SPY)} - 0.39844 * \\ &\quad \text{LOG(SPMOGPD/SPYPD)} + 0.375 * \text{LOG(SPMOG(-1))} \end{aligned}$$

US SHARE OF SPANISH IMPORT MARKET:

$$2: \quad \begin{aligned} \text{OGSPFUS} &= \text{OGSPFUS}(-1) * ((-0.39844) * (\text{USXOGPID}/\text{SPMOGPID}/ \\ &\quad \text{USXOGPID}(-1)/\text{SPMOGPID}(-1)) - 1) + 1) * ((-0.149) * (\text{USXOGPID}(-1)/ \\ &\quad \text{SPMOGPID}(-1)/(\text{USXOGPID}(-2)/\text{SPMOGPID}(-2)) - 1) + 1) * ((-0.09006) * (\\ &\quad \text{USXOGPID}(-2)/\text{SPMOGPID}(-2)/(\text{USXOGPID}(-3)/\text{SPMOGPID}(-3)) - 1) + 1) \end{aligned}$$

PESETA PRICE DEFLATOR FOR SPANISH IMPORTS:

$$3: \quad \begin{aligned} \text{SPMOGPD} &= \text{SPMOGPD}(-1) * (\text{SPMOGPID}/\text{SPMOGPID}(-1)) * \\ &\quad (\text{SPXR}/\text{SPXR}(-1)) \end{aligned}$$

SPANISH IMPORTS IN NOMINAL PESATAS:

$$4: \quad \text{SPNMOG} = \text{SPMOG} * \text{SPMOGPD}/100$$

SPANISH IMPORTS IN NOMINAL DOLLARS:

$$5: \quad \text{SPNMOGD} = \text{SPNMOG}/\text{SPXR}$$

US EXPORTS TO SPAIN IN TERMS OF 1985 DOLLARS:

$$6: \quad \text{USXSP} * 170.04 = \text{OGSPFUS} * (\text{SPMOG} * 1.9183)$$

US EXPORTS TO SPAIN IN TERMS OF CURRENT DOLLARS:

$$7: \quad \text{USNXSP} = \text{USXSP} * \text{USXOGPID}/170.75$$

Note: Equation 1 contains an estimate of the Spanish import price elasticity of demand of about -0.40, short run, and -0.64, long run. Equation 2 is based on the assumption that the trade share elasticity (which is close in concept to the elasticity of substitution) is equal to the aggregate import price elasticity.

Model of Portuguese Imports

SYMBOL DECLARATIONS

ENDOGENOUS:

OGPOFUS - US SHARE OF PORTUGUESE MARKET FOR NONFUEL, NONFOOD IMPORTS
POMOG - PORTUGUESE IMPORTS OF NONFUEL, NONFOOD GOODS, REAL ESCUDO TERMS
POMOGPD - ESCUDO PRICE DEFLATOR FOR PORTUGUESE IMPORTS
PONMOG - PORTUGUESE IMPORTS IN CURRENT ESCUDO TERMS
PONMOGD - PORTUGUESE IMPORTS IN CURRENT DOLLARS TERMS
USNXPO - US EXPORTS TO PORTUGAL IN CURRENT DOLLAR TERMS
USXPO - US EXPORTS TO PORTUGAL IN 1985 DOLLAR TERMS

EXOGENOUS:

DUM85 - DUMMY VARIABLE, 1 IN 1985, ZERO ELSEWHERE
POMOGPID - DOLLAR PRICE DEFLATOR FOR PORTUGUESE IMPORTS
POXR - DOLLAR/ESCUDOR EXCHANGE RATE
POY - REAL PORTUGUESE GDP
POYPD - PORTUGUESE GDP DEFLATOR
USXOGPID - PRICE DEFLATOR FOR US EXPORTS, DOLLAR TERMS

EQUATIONS

PORTUGUESE IMPORTS IN REAL ESCUDOS:

$$1: \quad \text{LOG(POMOG)} = -3.076 + 1.111 * \text{LOG(POY)} - 0.604 * \text{LOG(POMOGPD / POYPD)} + 0.159 * \text{LOG(POMOG(-1))}$$

US SHARE OF PORTUGUESE MARKET:

$$2: \quad \text{OGPOFUS} = \text{OGPOFUS}(-1) * ((-0.604) * (\text{USXOGPID} / \text{POMOGPID} / (\text{USXOGPID}(-1) / \text{POMOGPID}(-1)) - 1) + 1) * ((-0.096) * (\text{USXOGPID}(-1) / \text{POMOGPID}(-1) / \text{POMOGPID}(-2)) - 1) + 1) * ((-0.018) * (\text{USXOGPID}(-2) / (\text{USXOGPID}(-2) / \text{POMOGPID}(-2) / (\text{USXOGPID}(-3) / \text{POMOGPID}(-3)) - 1) + 1) - 0.01847 * \text{DUM85}$$

ESCUDO PRICE DEFLATOR FOR PORTUGUESE IMPORTS:

$$3: \quad \text{POMOGPD} = \text{POMOGPD}(-1) * (\text{POMOGPID} / \text{POMOGPID}(-1)) * (\text{POXR} / \text{POXR}(-1))$$

PORTUGUESE IMPORTS IN NOMINAL ESCUDOS:

$$4: \quad \text{PONMOG} = \text{POMOG} * \text{POMOGPD} / 100$$

PORTUGUESE IMPORTS IN NOMINAL DOLLARS:

$$5: \quad \text{PONMOGD} = \text{PONMOG} / \text{POXR}$$

US EXPORTS TO PORTUGAL IN TERMS OF 1985 DOLLARS:

$$6: \quad \text{USXPO} * 170.395 = \text{OGPOFUS} * (\text{POMOG} * 2.712)$$

US EXPORTS TO PORTUGAL IN TERMS OF CURRENT DOLLARS:

$$7: \quad \text{USNXPO} = \text{USXPO} * \text{USXOGPID} / 170.75$$